much-discussed question of the abnormal aberration of fog signals. It will be remembered that Prof. Joseph Henry, who for twelve years served as chairman of the Lighthouse Board, thought that the wind played a more important part in the abnormal aberration of sound waves than the so-called acoustic clouds described by Professor Tyndall. It is probable that up to a certain point both explanations may hold, but the wind is seemingly the more active factor in most cases. Sound moving with the wind is refracted downward, and moving against the wind refracted upward.[4]

From the great mass of conflicting evidence it appears that a homogeneous atmosphere without the internal stream lines (see reference to this under Air Drainage in previous papers[5]), conveys sound waves very well. But this is not the usual condition. Under normal conditions the mass of air within a mile or two of a lighthouse and extending upward half a mile is neither still nor homogeneous. One of the main purposes of the accompanying fog photographs is to show the stratification, faulting, and upheaval effects, due to differences of temperature and density caused by extensive and rapidly moving currents. Of course the aberration of audibility of fog signals due to changes of the sound-conveying medium is not to be confounded with the aberration in audibility due to topographical features and the normal reflection and refraction of sound waves. Probably within a short distance of every lighthouse there are zones or points of inaudibility due to the latter causes. An excellent illustration of this can be found in a paper on Fogs and Fog Signals of the Pacific coast by Ferdinand Lee Clarke.[6] It is there shown that the sirens around the Golden Gate and in San Francisco Bay are inaudible at certain points. Here there is an interference of sound waves due to numerous natural reflections. It has been suggested that if the fog signals at Lime Point and at Point Bonita were properly attuned a resulting harmonic might be heard at certain points instead of the weakened noise now heard. We need measurements of the energy producing the air pulsation, the proportionate energy reaching the ship or given point, and the rate of expenditure with different conditions of density and air movement. By the employment of suitable resonators the pulsations reaching the ship might be more easily detected. With the introduction of wireless telegraphy, it would almost seem practicable to obtain by this same principle of resonance etherial electromagnetic signals, and by comparing the time intervals between these and the sound waves in air or transmitted through water, the distance apart of the vessels or the distance from the shore might be determined within a few feet.

NOTES BY THE EDITOR.

THE MILWAUKEE CONVENTION OF WEATHER BUREAU OFFICIALS.

After collecting the opinions of a large number of Weather Bureau officials and giving due weight to the inducements offered by local authorities, the Chief of Bureau has concluded that it will be wisest to recommend that the second general convention of Weather Bureau officials be held in Milwaukee late in August or early in September, 1901. In accordance with this recommendation the Honorable Secretary of Agriculture has approved of the proposed convention and has authorized the acceptance of the proffered hospitality of that city. The headquarters of the convention will be at the Hotel Pfister. The freedom of the Milwaukee Press Club is offered to the members of the convention by its President, Mr. W. A. Bowdish. Mr. W. M. Wilson, Section Director at Milwaukee, states that an informal reception and a banquet will be given by the citizens through the Press Club. Those who desire to visit the Pan-American Exposition at Buffalo will, undoubtedly find special inducements in the way of excursion tickets ready at hand. It is probable that three days, viz, Tuesday, Wednesday, and Thursday of the last week in August, or the same days of the succeeding week, but preferably the former, will be sufficient in which to transact the business and pleasures of the convention. Sessions will be held in the morning and afternoon, but not at night. It is hoped that about one hundred officials will be present.

STATION LIBRARIES.

By direction of the Chief of the Bureau, about one hundred selected stations have lately been supplied with the following books: Irrigation and Drainage, by F. H. King. Light, Visible and Invisible, by S. P. Thompson. College Algebra, by E. A. Bowser. Elements of Physics, by Henry Crew. Matter and Motion, by J. Clerk Maxwell. A Students' Standard Dictionnay (abridged from Funk & Wagnalls' Standard). English Grammar, by William Cobbett. Realm of Nature, by H. R. Mill. Elements of Plane and Spherical Trigonometry, by C. W. Crockett. New Astronomy, by D. P. Todd. Text-book of Physics, by W. Watson.

In addition to these, most of the stations had already been provided with the meteorologies of Loomis, Waldo, Buchan, and Scott, Greeley's American Weather, Pope's Electric Telegraph, Abercromby's Principles of Forecasting, Ley's Study and Forecast of Weather, and Rosser's Law of Storms. The section centers of the Climate and Crop Service have also the agricultural works by Storer and Johnson.

Most of the stations also have all the Weather Bureau publications, MONTHLY WEATHER REVIEWS, Bulletins Professional Papers, Annual Reports, Ferrel's Recent Advances in Meteorology, Abbe's Meteorological Apparatus and Methods, Bigelow's Report on International Cloud Observations, Marvin's various Instructions for the use of Instruments and Psychrometric Tables, etc. Those who desire to consult works on meteorology will, therefore, do well to visit the nearest Weather Bureau station.

LECTURES AND INSTRUCTION BY WEATHER BUREAU MEN.

Mr. P. H. Smyth, Observer Weather Bureau, at Cairo, Ill., reports, under date of January 20 that the students of the Douglas School, W. T. Phelps, Principal, are studying the daily weather maps and the work of the Weather Bureau. In addition to the regular instruction, lectures are delivered by Mr. Smyth.

Mr. Alfred F. Sims, Local Forecast Official, Albany, N. Y., lectured on meteorology at the State Normal College, January 28, and before a popular audience on January 25. The latter lecture was finely illustrated with about forty lantern

[4] Consult article, Sound Signals, by Arnold B. Johnson, Chief Clerk, Lighthouse Board, Appleton's Annual Cyclopedia, 1883, p. 719.

[5] See MONTHLY WEATHER REVIEW, November, 1900, p. 492.

[6] Published in 1888 in San Francisco.

slides. The title of these lectures, "A Meteorologist's Dream," or "Dreaming in the Interest of Mankind," shows the happy combination of poetry and science that characterizes Mr. Sims's popular lectures.

Mr. S. S. Bassler, Local Forecast Official, Cincinnati, Ohio, lectured on January 24 before the Cincinnati Technical School on meteorology as illustrating the general principle of "What is worth doing at all is worth doing well."

CUMULUS CLOUDS ABOVE COLUMNS OF SMOKE.

Referring to the MONTHLY WEATHER REVIEW for August, 1900, page 325, and October, page 433, Mr. George C. Stocking, voluntary observer at Grand Mound, Washington, reports as follows:

In August last, about sixty acres of heavy fir slashing was being burned. This produced a column of very dense black smoke which rose to a great height. I made an estimate of the height of the column at the time; the distance from me was about two miles and the angular elevation of the top of the column about 30°. When it reached its greatest height, the top of the column turned white, overflowed and spread out, presenting every appearance of a large cumulus cloud. Occasionally it would boil up in the center above the general level of the top of the cloud and spill over upon the great mass below. There were a few cirrus clouds high up, but no other cumulus clouds in sight. The time of day was about 2 p. m. [Pacific or one hundred and twentieth meridian time.—ED.] The fire and smoke were to the southeast of me. I did not think of the white and cloudy appearance as being due to any reflection of light, but supposed it to be a true cumulus cloud caused by the condensation of the moisture contained in the ascending column of heated air.

I remember observing another column of smoke about ten miles distant in the north. This column did not spread out, but stood up tall and impressive, like a rather dark cumulus cloud, but the sky was overcast.

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

CHARACTERISTICS OF THE WEATHER FOR JANUARY.

The characteristics of January, 1901, were unusual warmth and dryness. The areas of low pressure for the most part moved rapidly along the northern boundary and down the St. Lawrence Valley. There were no very severe cold waves and snowfall was below the average.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV and the numerical values are given in Tables I and VI.

There were no special features as regards the distribution of monthly mean pressure. As compared with the preceding month, monthly mean pressure was lower in the Rocky Mountain districts and thence westward to the Pacific coast. Pressure was also low, as compared with the preceding month, on the Atlantic coast, in the Lake region, and the Ohio Valley. It was also below the seasonal average, except in the southern Rocky Mountain region and locally in the northern Plateau.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was considerably above the normal in all districts, except a narrow fringe along the Atlantic coast from New England to Florida and in the Great Valley of California from Red Bluff to Sacramento. The region of greatest positive departure was in the upper Missouri Valley, where the daily means ranged from 10° to 12° above the seasonal normal. This great excess in the daily and monthly means of temperature was due to the large number of low areas that moved along the northern boundary, giving southerly and southwesterly winds throughout the northeastern Rocky Mountain slope and the Missouri Valley. The temperature was also much above the seasonal average from northern Texas northward over western Arkansas, Kansas, Oklahoma, and Indian Territory, to the British Possessions. Maximum temperatures above 80° were registered in Florida and in southern Texas and southern California. A maximum temperature as high as 40° was not registered in the Lake Superior region, in northern Minnesota, and the northeastern portion of North Dakota. Minimum temperatures below freezing were not registered in central and southern Florida nor along the coast of California. Freezing temperatures were recorded in northern Florida and quite generally along the Gulf coasts. The lowest minimum recorded at any Weather Bureau station was 36° below zero at Lander, Wyo., and at other points in North Dakota and Minnesota.

The average temperature for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	25.2	— 0.3		
Middle Atlantic	12	33.6	+ 1.1		
South Atlantic	10	46.6	0.0		
Florida Peninsula	7	59.6	— 0.5		
East Gulf	7	51.2	+ 1.4		
West Gulf	7	52 6	+ 5.9		
Ohio Valley and Tennessee	12	36 1	+ 1.8		
Lower Lake	8	26 5	+ 1.1		
Upper Lake	9	20 4	+ 2.9		
North Dakota	8	9.4	+ 6.5		
Upper Mississippi Valley	11	27.3	+ 6.2		
Missouri Valley	10	28 9	+ 9.0		
Northern Slope	7	24 3	+ 7.3		
Middle Slope	6	34.5	+ 5.4		
Southern Slope	6	43.6	+ 5.2		
Southern Plateau	15	38.2	+ 8.1		
Middle Plateau	9	29.3	+ 5.7		
Northern Plateau	10	27.8	+ 4.0		
North Pacific	9	39.3	+ 0 4		
Middle Pacific	5	47.4	+ 0.3		
South Pacific	4	52.8	+ 2 2		

In Canada.—Prof. R. F. Stupart says:

Temperature was a little below average in eastern and northeastern Ontario, in western Quebec, and also over the greater portion of British Columbia, and above the average over the large remaining portion of Canada. In many parts of Alberta and Assiniboia the average was exceeded by from 6° to 8°.

PRECIPITATION.

Much less than the average amount of rain and snow fell in all districts, except the middle and south Atlantic coast region. The rainfall in the central and eastern Gulf States,